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Gyrokinetic analysis of kinetic ballooning instability using real magnetic geometry DANIEL FULTON, YONG XIAO, ZHIHONG LIN, University of California, Irvine — Understanding the physics of the pedestal region of toroidal plasmas is critical to obtaining confinement with high core temperatures. The pedestal region is characterized by large gradients in pressure, temperature, and density profiles, which provide a source of free energy to drive a number of instabilities. Studying these instabilities can provide information on maximal allowable gradients in the pedestal. One of the most dangerous instabilties is the kinetic ballooning mode (KBM), driven by the pressure gradient. In this study, we do a pressure scan to explore the threshold of the KBM mode, using gyrokinetic simulation code GTC and equilibriums based on DIII-D discharge 131997. The nonlocal aspects of GTC allow us to evaluate the effects of real magnetic geometry on the KBM. Comparisons between codes GTC, GYRO, GEM, and BOUT++ are underway to benchmark all simulations.

Daniel Fulton
University of California, Irvine

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